

North Beeks Timber Sale Road Plan  
Application # 30-073650  
Revised 1-7-2003  
By Robert Travis, PE

7,850 feet of required construction  
30,845 feet of required reconstruction  
12,670 feet of required abandonment

11,860 feet of optional construction

Crush and apply 6,131 cubic yards of 2 ½ minus rock from a pit to be developed on State Land

Purchase and install the following culverts:

18 inch by 30 ft by 2 culverts	24 inch by 30 ft by 7 culverts
18 inch by 32 ft by 2 culverts	24 inch by 34 ft by 1 culvert
18 inch by 34 ft by 1 culvert	24 inch by 36 ft by 3 culverts
18 inch by 36 ft by 1 culvert	

30 inch by 32 ft by 1 culvert	30 inch by 34 ft by 1 culvert
-------------------------------	-------------------------------

Purchase and install minimum of 415 feet of geotextile fabric

Purchase and spread 63 pounds of grass seed. No fertilizer is needed

Purchaser maintenance and final maintenance on the following roads:  
P72, P721, P721A, P7210, P7211, P7212, P7213, P7214, P7215, P7216, P7217, P7218, P7219  
P7220, P7221, P7222, P7223, P7224, P7225, P7226, P7227, P7228

Designated maintainer on the P7200

Forest Practice information:

Required construction and reconstruction as above. Steepest sideslope on construction is 30%, no end haul. Steepest sideslope on reconstruction is 40%, no end haul.

Road maintenance (purchaser and designated) on 61,585 feet of road

No temporary roads

No fish stream culverts being installed. Install 13 culverts on draws & type 5 streams

Abandonment to be completed by end of the contract date.

SEPA information

Acres of new roads (required and optional) = 15 ft \* 19,710ft = 6.8 acres

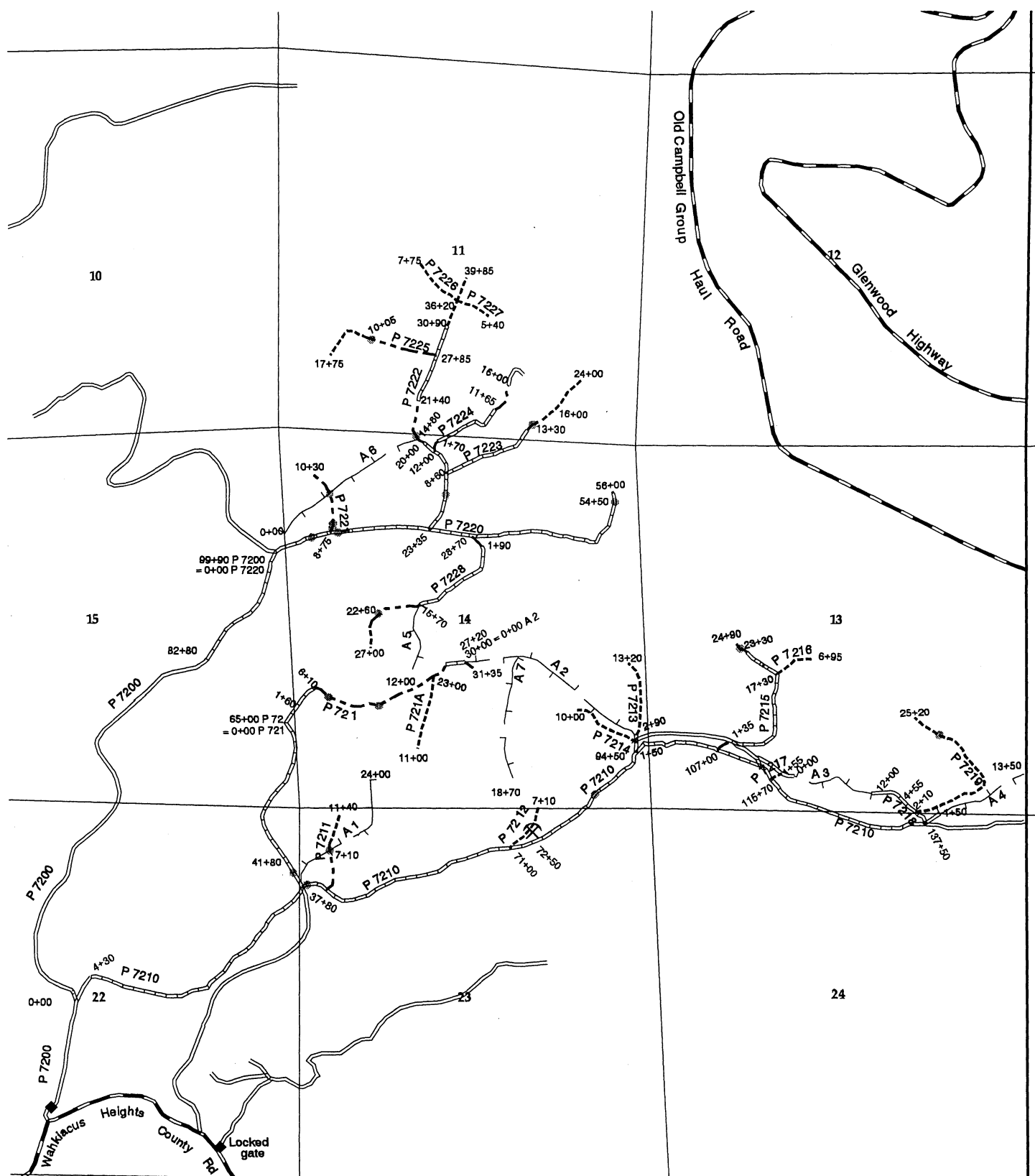
Haul route is P7200 to Wahkiacus County road, to Highway 142 to highway 14 and/or highway 97.

No closure/decommissioning/ abandonment of roads constructed or reconstructed.

SALE NAME: North Beeks  
AGREEMENT NO.: 73650  
GRANT: Common School, Forest Board Transfer

REGION: Southeast  
COUNTY: Klickitat

Township 05 North Range 13 East, W.M.



**SCALE IN MILES**

- |  |  |  |                            |
|--|--|--|----------------------------|
|  | County Road                                    |  | Rock Pit (to be developed) |
|  | Existing Road                                  |  | Locked Gate                |
|  | Required Construction<br>bounded by R/W tags   |  | Culvert                    |
|  | Optional Construction                          |  |                            |
|  | Required Reconstruction<br>bounded by R/W tags |  |                            |
|  | Abandonment                                    |  |                            |

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
DOUG SUTHERLAND, COMMISSIONER OF PUBLIC LANDS

NORTH BEEKS TIMBER SALE ROAD PLAN  
SECTIONS 11,13,14,15,22,23, TOWNSHIP 5 NORTH, RANGE 13 EAST, W.M.  
KLICKITAT COUNTY

AGREEMENT NO.: 73650 DATE: 11-14-2002

SECTION 0 - SCOPE OF PROJECT

This project includes but is not limited to construction including:

- clearing;
- grubbing;
- right of way debris disposal;
- excavation and/or embankment to subgrade;
- landing construction;
- acquisition and installation of drainage structures;
- acquisition, manufacture and application of rock;
- acquisition and application of geotextile fabric
- acquisition and application of grass seed and fertilizer.

This project includes, but is not limited to reconstruction including:

- brushing right of way;
- clearing existing excavation and embankment slopes;
- grubbing existing excavation and embankment slopes;
- right of way debris disposal;
- landing construction;
- constructing ditches;
- acquisition and installation of additional culverts;
- realigning road segments;
- widening road segments;
- grading and shaping existing road surface and turnouts;
- constructing additional turnouts;
- compaction of road surface
- acquisition, manufacture and application of rock;
- acquisition and application of grass seed and fertilizer.

This project also includes but is not limited to abandonment including:

- light abandonment;
- covering roads with slash

SECTION 1.1: GENERAL CLAUSES: GENERAL

1.1-1

Clauses in this plan apply to all construction, reconstruction, or pre-haul maintenance including landings unless otherwise noted.

1.1-2

Construction or reconstruction of the following roads is required. All roads shall be constructed or reconstructed on the States location and in accordance with this Road Plan.

<u>Road</u>	<u>Station</u>	<u>Type</u>
P72	37+80 to 41+80	RECONSTRUCTION
P721	0+00 TO 6+10	RECONSTRUCTION
P721	6+10 TO 27+20	CONSTRUCTION
P721	27+20 TO 30+00	RECONSTRUCTION
P721	30+00 TO 31+35	CONSTRUCTION
P7200	82+80 TO 99+90	RECONSTRUCTION
P7210	4+30 TO 137+50	RECONSTRUCTION
P7211	0+00 to 7+10	CONSTRUCTION
P7213	0+00 TO 2+90	RECONSTRUCTION
P7215	0+00 TO 1+35	CONSTRUCTION
P7215	1+35 TO 23+30	RECONSTRUCTION
P7215	23+30 TO 24+90	CONSTRUCTION
P7218	0+00 TO 4+55	RECONSTRUCTION
P7220	0+00 TO 54+50	RECONSTRUCTION
P7220	54+50 TO 56+00	CONSTRUCTION
P7221	0+00 TO 10+30	CONSTRUCTION
P7222	0+00 TO 14+80	RECONSTRUCTION
P7222	14+80 TO 21+40	CONSTRUCTION
P7222	21+40 TO 30+90	RECONSTRUCTION
P7223	0+00 TO 13+30	RECONSTRUCTION
P7223	13+30 TO 16+00	CONSTRUCTION
P7224	0+00 TO 1+70	CONSTRUCTION
P7224	1+70 TO 11+65	RECONSTRUCTION
P7224	11+65 TO 16+00	CONSTRUCTION
P7225	0+00 TO 10+05	CONSTRUCTION
P7228	0+00 TO 1+90	CONSTRUCTION
P7228	1+90 TO 15+70	RECONSTRUCTION
P7228	15+70 TO 22+60	CONSTRUCTION

1.1-3  
Abandonment of the following roads is required. All roads shall be abandoned in accordance with this Road Plan. Roads may not be used for timber haul.

<u>Road</u>	<u>Station</u>	<u>Type</u>
A1	0+00 TO 24+00	LIGHT
A2	0+00 TO 28+00	LIGHT
A3	0+00 TO 12+00	LIGHT
A4	1+50 TO 13+50	LIGHT
A5	0+00 TO 12+00	LIGHT
A6	0+00 TO 20+00	LIGHT
A7	0+00 TO 18+70	LIGHT

1.1-4  
If the purchaser desires a road location or design change, a revised road plan shall be submitted to the State for consideration.

1.1-7  
Construction of the following roads is not required. Roads used by the Purchaser shall be constructed on the State’s location in accordance with this Road Plan.

<u>Road</u>	<u>Station</u>	<u>Type</u>
P721A	0+00 TO 11+00	CONSTRUCTION
P7211	7+10 TO 11+40	CONSTRUCTION
P7212	0+00 TO 7+10	CONSTRUCTION
P7213	2+90 TO 13+20	CONSTRUCTION
P7214	0+00 TO 10+00	CONSTRUCTION
P7216	0+00 TO 6+95	CONSTRUCTION
P7217	0+00 TO 1+55	CONSTRUCTION
P7219	0+00 TO 25+20	CONSTRUCTION
P7222	30+90 TO 39+85	CONSTRUCTION
P7223	16+00 TO 24+00	CONSTRUCTION
P7225	10+05 TO 17+75	CONSTRUCTION
P7226	0+00 TO 7+75	CONSTRUCTION
P7227	0+00 TO 5+40	CONSTRUCTION
P7228	22+60 TO 27+00	CONSTRUCTION

1.1-9

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock subsurface springs, saturated ground, and unstable soil.

## SECTION 1.2 - GENERAL: CONSTRUCTION CONSTRAINTS

1.2-1

The construction or reconstruction or abandonment of any roads specified herein shall not be permitted between November 1st and May 1st unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-2

Purchaser shall not use roads constructed, reconstructed, or maintained under this Road Plan for hauling, other than timber cut on the right of way, without written approval from the contract administrator.

1.2-3

All construction or reconstruction must be completed and approved in writing by the contract administrator prior to haul on any roads under this contract.

### SECTION 1.2.1 - GENERAL: CONSTRUCTION CONSTRAINTS: CONSTRUCTION SEQUENCE

1.2.1-1

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the contract administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground. Temporary diversion culverts shall be provided when designed culverts are elevated above natural ground within embankments.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches and culvert installation shall be completed and are subject to written approval by the contract administrator prior to rock application.

SECTION 1.3 - GENERAL: CONSTRAINTS

- 1.3-1  
Rock and/or timber haul shall not be permitted between November 1<sup>st</sup> and May 1<sup>st</sup> unless authorized, in writing, by the contract administrator.

SECTION 1.5 - GENERAL: ROAD MAINTENANCE

- 1.5-1  
Maintenance on the following roads shall be performed in accordance with Purchasers Road Maintenance Specifications.

<u>Road</u>	<u>Stations</u>
P72	37+80 TO 65+00
P721	0+00 TO 31+35
P721A	0+00 TO 11+00
P7210	0+00 TO 137+50
P7211	0+00 TO 11+40
P7212	0+00 TO 7+10
P7213	0+00 TO 13+20
P7214	0+00 TO 10+00
P7215	0+00 TO 24+90
P7216	0+00 TO 6+95
P7217	0+00 TO 1+55
P7218	0+00 TO 4+55
P7219	0+00 TO 25+20
P7220	0+00 TO 56+00
P7221	0+00 TO 10+30
P7222	0+00 TO 39+85
P7223	0+00 TO 24+00
P7224	0+00 TO 16+00
P7225	0+00 TO 17+75
P7226	0+00 TO 7+75
P7227	0+00 TO 5+40
P7228	0+00 TO 27+00

- 1.5-2  
Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designate Road Maintainer) shall be performed in accordance with Purchaser Maintenance Specifications.

- 1.5-3  
Snowplowing shall not be permitted unless authorized, in writing, by the Contract Administrator.

- 1.5-4  
At termination of haul final maintenance shall be performed on the following roads. At minimum final maintenance shall consist of blading the road with a motor grader, removing berms, crowning or outsloping the road as specified in the typical section sheet and/or clause 6.1-1, reshaping rolling dips and/or water bars to specification, pulling ditches and cleaning culvert inlets and outlets. The finished road surface shall drain freely and shall be smooth, firm and free of chuckholes.

<u>Road</u>	<u>Stations</u>
P72	37+80 TO 65+00
P721	0+00 TO 31+35
P721A	0+00 TO 11+00
P7210	0+00 TO 137+50
P7211	0+00 TO 11+40
P7212	0+00 TO 7+10
P7213	0+00 TO 13+20
P7214	0+00 TO 10+00
P7215	0+00 TO 24+90
P7216	0+00 TO 6+95
P7217	0+00 TO 1+55
P7218	0+00 TO 4+55
P7219	0+00 TO 25+20
P7220	0+00 TO 56+00
P7221	0+00 TO 10+30
P7222	0+00 TO 39+85
P7223	0+00 TO 24+00
P7224	0+00 TO 16+00
P7225	0+00 TO 17+75
P7226	0+00 TO 7+75
P7227	0+00 TO 5+40
P7228	0+00 TO 27+00

## SECTION 2 - CLEARING

### SECTION 2.1 - R/W TIMBER

#### 2.1-1

Fell all vegetative material larger than 2 inches dbh or over 4 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on the Typical Section Sheet.

#### 2.1-2

On the following road, deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline and within the cleared right-of-way. The decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment for the roadbed.

<u>Road</u>	<u>Stations</u>
P7200	82+80 to 87+80
P7210	125+00 to 139+70
P7218	0+00 to 1+50

## SECTION 3 - GRUBBING

### SECTION 3.1- GRUBBING: GENERAL

#### 3.1-1

All stumps shall be removed that fall between grubbing limits shown on the Typical Section Sheet. Those with undercut roots shall be removed.

#### 3.1-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

SECTION 4.1 - DEBRIS DISPOSAL AND REMOVAL: GENERAL

- 4.1-1 Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume, within the grubbing limits.
- 4.1-2 All right-of-way debris disposal shall be completed prior to application of rock and/or timber haul.

SECTION 4.2 - DEBRIS DISPOSAL AND REMOVAL:

METHOD: SCATTER

- 4.2-1 Right-of-way debris shall be scattered outside of the clearing limits.
- 4.2-2 Right-of-way debris shall not be placed against standing timber.

SECTION 5 - EXCAVATION

SECTION 5.1 - EXCAVATION: GENERAL

- 5.1-1 Unless controlled by construction stakes or specific design sheets herein, roads shall be constructed in accordance with dimensions shown on the Typical Section Sheet.
- 5.1-2 Purchaser shall not bury merchantable material.
- 5.1-3 Road grade and alignment shall conform to the State's marked location and drawings. Grade and alignment shall have smooth continuity without abrupt changes in direction. Maximum grades are: 15 percent favorable and 10 percent adverse or as specified on drawings. Minimum curve radius is 70 feet.
- 5.1-4 Except as designated on the curve widening list extra widening on the inside of curves shall be as indicated below.

2 feet extra	80 to 100 foot radius curves.
4 feet extra	60 to 79 foot radius curves.

- 5.1-8 Excavation slopes shall be constructed no steeper than shown on the following table except as construction staked or designed

<u>Material Type</u>	<u>Excavation Slope Ratio</u>
Common Earth (on side slopes of 55%).....	1:1
Common Earth (55% to 70% sideslopes).....	¾:1
Common Earth (on slopes over 70%).....	½:1
Fractured or loose rock.....	½:1
Hardpan or Solidrock.....	¼:1



5.1-9  
Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10  
Except as construction staked or designed Embankments shall be widened as follows:

<u>Height at Centerline</u>	<u>Subgrade Widening</u>
Less than 6 feet.....	2 feet
6 feet or over.....	4 feet

5.1-11  
Embankment slopes shall be constructed no steeper than shown on the following table except as construction staked or designed

<u>Material Type</u>	<u>Embankment Slope Ratio</u>
Common Earth and rounded gravel	1-1/2:1
Angular rock.....	11/4:1
Sandy soils	2:1

5.1-12  
Organic material shall be excluded from embankment.

5.1-15  
Waste material may be deposited adjacent to the road prism on side slopes up to 55 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes of 55 percent or more, all excavation shall be end hauled or pushed to designated embankment sites. All waste embankments shall be compacted in horizontal layers not exceeding 2 feet.

5.1-21  
Waste material shall not be deposited within 100 feet of a cross drain culvert installation.

5.1-23  
Turnouts shall be constructed to provide a maximum distance of 1000 feet between turnouts and shall be adjusted to fit final alignment and sight distances.

<u>Road</u>	<u>Stations</u>
P721	0+00 TO 10+10
P7210	4+30 TO 137+50
P7215	0+00 TO 24+90
P7219	0+00 TO 25+20
P7220	0+00 TO 56+00
P7223	0+00 TO 19+00
P7224	0+00 TO 16+00
P7228	0+00 TO 27+00

5.1-24  
The Purchaser shall notify the State a minimum of 14 calendar days before work shall occur on the following roads. The Contract administrator or someone designated by the contract administrator shall be onsite while work is done.

<u>Road</u>	<u>Station</u>
P7215	21+90 TO 24+05

5.1-25  
The following roads shall be relocated. Beginning and ending stations of the relocation has been marked with survey stakes, while orange ribbon is used to mark intermediate points

<u>Road</u>	<u>Stations</u>	<u>Comments</u>
P7210	57+40 TO 59+00	RIGHT 15 FT
P7210	98+50 TO 101+00	LEFT 50 FT
P7210	106+00 TO 108+00	LEFT 50 FT
P7210	111+00 TO 113+30	LEFT 50 FT

## SECTION 5.2 - EXCAVATION: PIONEER ROADS

### 5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits or restrict drainage.

## SECTION 5.3 - EXCAVATION: COMPACTION

### 5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over the entire width of the lifts. Sidehill embankments too narrow to accommodate excavation equipment may be placed by end dumping or side casting until sufficiently wide to support the equipment.

## SECTION 5.4 - EXCAVATION: SEDIMENTATION

### 5.4-1

Sediment bearing runoff shall not be permitted to go into streams.

### 5.4-3

On the following roads, purchaser shall seed cut and fill slopes within 100 feet of culvert installations. Application rate shall be 35 lbs. seed per acre. Seed shall be provided by the purchaser. Seed mix shall be: intermediate wheatgrass 15 lbs., smooth brome 10 lbs., hard fescue 10 lbs. Seed shall be certified. Seed shall be applied when notified by the Contract Administrator

<u>Road</u>	<u>Stations</u>
P72	38+10 to 40+10
P721	6+90 to 8+90
P721	14+70 TO 16+70
P7210	39+80 TO 41+80
P7210	134+00 to 137+50
P7211	5+10 to 7+10
P7215	21+90 TO 24+90
P7218	0+00 to 2+10
P7219	19+40 TO 21+40
P7220	5+90 TO 7+90
P7220	53+50 TO 55+50
P7221	1+20 to 3+60
P7221	5+20 TO 7+20
P7222	3+85 TO 5+85
P7222	15+20 TO 17+20
P7223	13+30 TO 15+30
P7225	8+40 to 10+40
P7228	20+70 to 22+70

Required seed not spread by the termination of this contract shall become property of the State.

## SECTION 5.5 - EXCAVATION: SUBGRADE COMPACTION

### 5.5-2

Finished subgrade shall be shaped as shown on the Typical Section Sheet. Surface shall be graded and compacted to a uniform, firm, rut-free surface to ensure runoff in an even, unconcentrated manner.

## SECTION 6 - DRAINAGE

### SECTION 6.1 - DRAINAGE: SURFACE DRAINAGE

#### 6.1-1

On the following roads surfaces shall be shaped to augment the escape of surface runoff.

<u>Road</u>	<u>Station</u>	<u>Road Shape</u>
P721	0+00 TO 6+10	CROWN 4" AT CENTERLINE
P721	6+10 TO 27+20	OUTSLOPE 4 IN IN 10 FT
P721	27+20 TO 31+35	CROWN 4" AT CENTERLINE
P721A	0+00 TO 11+00	CROWN 4" AT CENTERLINE
P7210	4+30 TO 25+80	OUTSLOPE 4 IN IN 10 FT
P7210	25+80 TO 57+40	CROWN 4" AT CENTERLINE
P7210	57+40 TO 95+00	OUTSLOPE 4 IN IN 10 FT
P7210	95+00 TO 139+70	CROWN 4" AT CENTERLINE
P7211	0+00 TO 11+40	CROWN 4" AT CENTERLINE
P7212	0+00 TO 7+10	CROWN 4" AT CENTERLINE
P7213	0+00 TO 5+20	CROWN 4" AT CENTERLINE
P7213	5+20 TO 13+20	OUTSLOPE 4 IN IN 10 FT
P7214	0+00 TO 10+00	OUTSLOPE 4 IN IN 10 FT
P7215	0+00 TO 8+35	CROWN 4 IN AT CENTERLINE
P7215	8+35 TO 21+90	OUTSLOPE 4 IN IN 10 FT
P7215	21+90 TO 24+90	CROWN 4" AT CENTERLINE
P7216	0+00 TO 6+95	CROWN 4" AT CENTERLINE
P7217	0+00 TO 1+55	CROWN 4" AT CENTERLINE
P7218	0+00 TO 4+55	CROWN 4" AT CENTERLINE
P7219	0+00 TO 10+75	OUTSLOPE 4 IN IN 10 FT
P7219	10+75 TO 13+90	CROWN 4" AT CENTERLINE
P7219	13+90 TO 25+20	OUTSLOPE 4 IN IN 10 FT
P7220	0+00 TO 56+00	CROWN 4" AT CENTERLINE
P7221	0+00 TO 10+30	CROWN 4" AT CENTERLINE
P7222	0+00 TO 39+85	CROWN 4" AT CENTERLINE
P7223	0+00 TO 24+00	CROWN 4" AT CENTERLINE
P7224	0+00 TO 16+00	CROWN 4" AT CENTERLINE
P7225	0+00 TO 17+75	CROWN 4" AT CENTERLINE
P7226	0+00 TO 7+75	CROWN 4" AT CENTERLINE
P7227	0+00 TO 5+40	CROWN 4" AT CENTERLINE
P7228	0+00 TO 27+00	CROWN 4" AT CENTERLINE

#### 6.1-2

Berms shall be removed from road shoulders to permit escape of runoff.

### SECTION 6.2 - DRAINAGE: CULVERTS/DOWNSPOUTS/FLUMES

#### SECTION 6.2.1 - DRAINAGE: CULVERTS/DOWNSPOUTS/FLUMES: GENERAL

6.2.1-1

Purchaser shall furnish, install and maintain galvanized AASHTO specification No. M36 or corrugated polyethylene tubing AASHTO classification "Type S" and AASHTO designation No. M294 culverts as designated on the Culvert List.

6.2.1-2

Annular corrugated bands and culvert ends shall be used on metal culverts. On culverts 24 inches in diameter and smaller, bands shall have a minimum width of 12 inches; on culverts over 24 inches in diameter, bands shall have a minimum width of 24 inches. Manufacturers approved connectors shall be used for corrugated polyethylene tubing.

6.2.1-4

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State.

SECTION 6.2.2 - DRAINAGE: CULVERTS/DOWNSPOUTS/FLUMES: INSTALLATION

SECTION 6.2.2.1 - DRAINAGE: CULVERTS/DOWNSPOUTS/FLUMES:  
INSTALLATION: METHODS

6.2.2.1-1

Culvert, downspout, flume and energy dissipator installation shall be in accordance with Culvert and Drainage Specification Detail and the National Corrugated Metal Pipe Association Installation Manual for Corrugated Steel Drainage Structures.

6.2.2-5

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2-6

Installations of culverts 30 inches in diameter and over shall be subject to written approval by the Contract Administrator prior to making backfill.

6.2.2-8

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

SECTION 6.3 - DRAINAGE: DITCHES

6.3-1

Ditches shall be constructed in accordance with dimensions shown on the Typical Section Sheet and shall drain freely to culverts, rolling dips and ditchouts.

6.3-4

On all roads, the construction and reshaping of ditches, and the cleaning of inlets and outlets of culverts shall be completed prior to the application of rock and shall be done in accordance with the TYPICAL SETION SHEET and CULVERT AND DRAINAGE SPECIFICATION DETAIL.

6.3-7

On the following roads, the Purchaser shall construct ditchouts from the ditch and shall be free draining onto the forest floor. Ditchouts will be constructed at locations as specified on the ditchout list.

Road  
P721A  
P7210  
P7215  
P7222  
P7224  
P7225

SECTION 6.7: DRAINAGE: ROLLING DIPS

6.7-1 On the following roads rolling dips shall be constructed in accordance with the Rolling Dip Detail sheet at locations as specified on the Rolling Dip List. **ROLLING DIPS SHALL BE INSTALLED AT THE TIME OF CONSTRUCTION AND SHALL BE CONTINUOUSLY MAINTAINED IN AN OPERABLE CONDITION.**

<u>Road</u>	<u>Stations</u>
P72	41+80
P721	0+00 TO 31+35
P7210	0+00 TO 137+50
P7211	0+00 TO 11+40
P7213	0+00 TO 13+20
P7214	0+00 TO 10+00
P7215	0+00 TO 24+90
P7216	0+00 TO 6+95
P7219	0+00 TO 25+20
P7220	0+00 TO 56+00
P7221	0+00 TO 10+30
P7222	0+00 TO 39+85
P7223	0+00 TO 24+00
P7224	0+00 TO 16+00
P7225	0+00 TO 17+75
P7226	0+00 TO 7+75
P7227	0+00 TO 5+40
P7228	0+00 TO 27+00

SECTION 7 - ROCK

SECTION 7.1 - ROCK SOURCE

7.1-1 Rock for construction and/or reconstruction under this contract may be obtained from a pit to be developed on State land in NE¼NW¼N¼ Section 14, Township 5 North, Range 13 East at no charge to the purchaser. Development and use shall be in accordance with a written "Pit Development and Reclamation Plan" prepared by the purchaser and subject to written approval by the contract administrator prior to any pit development or use. Upon completion of pit operations, the pits shall be left in the condition specified in the plans and subject to written approval by the contract administrator. Use of material from any other source shall be approved, in writing, by the contract administrator.

7.1-6 All rock source operations shall be conducted as directed by the Contract Administrator and in accordance with an approved development plan to be furnished by the Purchaser on file at the Southeast Region office.

SECTION 7.2 - ROCK: MANUFACTURE

SECTION 7.2-1 - ROCK: MANUFACTURE: SPECIFICATIONS

7.2.1-1C

Manufactured rock shall contain no more than 5 percent by weight of vegetative debris, dirt, or trash.

7.2.1-1B

Rock crushing operations shall conform to the following specifications:

- a. The Purchaser shall provide a weather proof field laboratory equipped with gradation testing equipment. This laboratory shall be available for use by the Contract Administrator during the entire crushing operation
- b. The crushing operation shall be concluded within 60 working days from the time it begins.
- c. If a smooth roll crusher is used, the maximum size of material fed into it shall be equal to the largest size of the material coming out of it plus 8.5 percent of the roll radius.

7.2.1-6

2 ½ INCH MINUS CRUSHED ROCK

%	passing 2 ½ " square sieve.....	100%
%	passing 2" square sieve.....	60 - 100%
%	passing 1" square sieve.....	50 – 70%
%	passing ¾" square sieve.....	30 – 50%
%	passing U.S. #40 sieve.....	16%
%	passing U.S. #200 sieve.....	5% Max

All percentages are by weight.  
The portion of ballast retained on ¼ inch sieve shall not contain more than 0.1 percent vegetative debris or trash.

2 ½ inch minus rock shall be used for ballast rock as indicated on the rock list

SECTION 7.2-3 - ROCK: MANUFACTURE: MEASUREMENT

7.2.3-1

Measurement of the 2 1/2 inch minus crushed rock shall be on a cubic-yard-truck measure basis. Each truck shall be measured by the contract administrator prior to rock hauling. The contract administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume hauled. The purchaser shall provide and maintain load tally sheets for each truck and shall give them to the contract administrator.

SECTION 7.4 - ROCK: APPLICATION

SECTION 7.4.1 - ROCK: APPLICATION: GEOTEXTILES

7.4.1-1

On the following roads, the purchaser shall provide and apply geotextile to the subgrade to a width that is two feet more than the driving surface width including turnout.

<u>Road</u>	<u>Stations</u>
P7215	21+90 to 24+05
P7221	5+20 TO 7+20

7.4.1-2  
Geotextile shall be woven, weigh at least 4 oz./sq. yd. and designed by the manufacture to be used for subgrade restraint and separation. Installation of the fabric shall be in accordance with the manufacture's specifications.

SECTION 7.4.2 - ROCK APPLICATION: PLACEMENT

7.4.2-1  
Apply at least the minimum required rock quantity as shown on the typical section sheet.

7.4.2-2  
Subgrade shall be approved, in writing, by the contract administrator prior to application of rock.

7.4.2-3  
On the following roads a grader and smooth drum vibratory roller shall be used to shape the subgrade prior to application of rock. The subgrade shall be compacted with a minimum of 6 complete passes with a smooth drum vibratory roller weighing at least 12,000 pounds. The finished subgrade shall be crowned 4 inches at centerline, smooth, firm and free of ruts and chuckholes.

<u>Road</u>	<u>Stations</u>
P7200	82+80 TO 99+90
P7210	4+30 TO 115+70
P7215	0+00 TO 17+30
P7220	0+00 TO 28+70
P7222	0+00 TO 27+85
P7224	0+00 TO 16+00

7.4.2-5  
On the following roads, rock shall be applied in one lift over geotextiles in accordance with the manufacture's specifications.

<u>Road</u>	<u>Stations</u>
P7215	21+90 to 24+05
P7221	5+20 TO 7+20

7.4.2-7  
Turnouts and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-8  
Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 7.4.3 - ROCK: APPLICATION: COMPACTION

7.4.3-1  
On the following roads, rock shall be spread and compacted full width in one 6 inch lift, uncompacted depth. Compaction shall be by smooth drum vibratory roller weighing at least 12,000 pounds. Six complete passes shall be made at a maximum speed of 3 m.p.h. Unless otherwise directed by the contract administrator, water shall be added to facilitate mixing and compaction. The finished surface shall be crowned 4 inches at centerline and shall be smooth firm and free of chuckholes and ruts. Water shall be added as needed to aid in compaction.

<u>Road</u>	<u>Stations</u>
P7200	82+80 TO 99+90
P7210	4+30 TO 115+70
P7215	0+00 TO 17+30
P7220	0+00 TO 28+70
P7222	0+00 TO 27+85
P7224	0+00 TO 16+00

7.4.3-3

On the following roads, Rock shall be spread and compacted using loaded haul trucks concurrently with rock hauling operations.

<u>Road</u>	<u>Stations</u>
P72	38+10 to 40+10
P721	6+90 to 16+70
P7210	134+00 to 137+50
P7211	5+10 to 7+10
P7215	21+90 TO 24+90
P7218	0+00 to 2+10
P7219	19+40 TO 21+40
P7220	53+50 to 55+50
P7221	1+20 to 6+90
P7223	13+30 TO 15+30
P7225	8+40 to 10+40
P7228	20+70 to 22+70

SECTION 8 - STRUCTURES

SECTION 8.1 - STRUCTURES: SIGNS

8.1-2

The Purchaser shall be responsible for the purchase and installation of the following road signs. Signs shall comply with the U.S. Department of Transportation, Federal Highway Administration's "Standard Highway Signs" manual.

<u>Sign</u>	<u>Location</u>
Log trucks ahead	¼ mile within the junction of the P7200 and the Wahkiacus County road
2 signs total	

8.4-3

On the following roads, Purchaser shall furnish and install a 4-wire gate constructed in accordance with the 4-WIRE GATE DETAIL.

<u>Road</u>	<u>Station</u>
P7212	6+00
P7215	1+20
P7216	1+00

8.4-4

Gate installations shall be incorporated in and connected to existing fence.



8.4-7  
On the following road, the gate shall be left closed and locked at all times unless approved otherwise by the Contract Administrator.

<u>Road</u>	<u>Station</u>
P7200	0+10

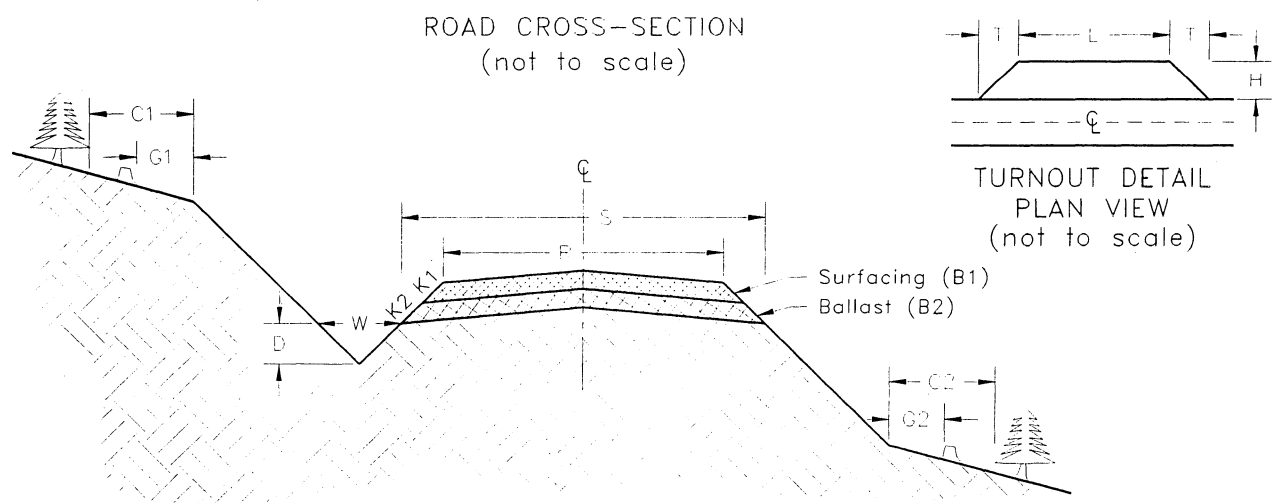
SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1  
The following roads shall be abandoned by the Purchaser at the State property line prior to the termination of this contract

<u>Road</u>	<u>Station</u>	<u>Type</u>
A1	0+00 TO 24+00	LIGHT
A2	0+00 TO 28+00	LIGHT
A3	0+00 TO 12+00	LIGHT
A4	1+50 TO 13+50	LIGHT
A5	0+00 TO 12+00	LIGHT
A6	0+00 TO 20+00	LIGHT
A7	0+00 TO 18+70	LIGHT

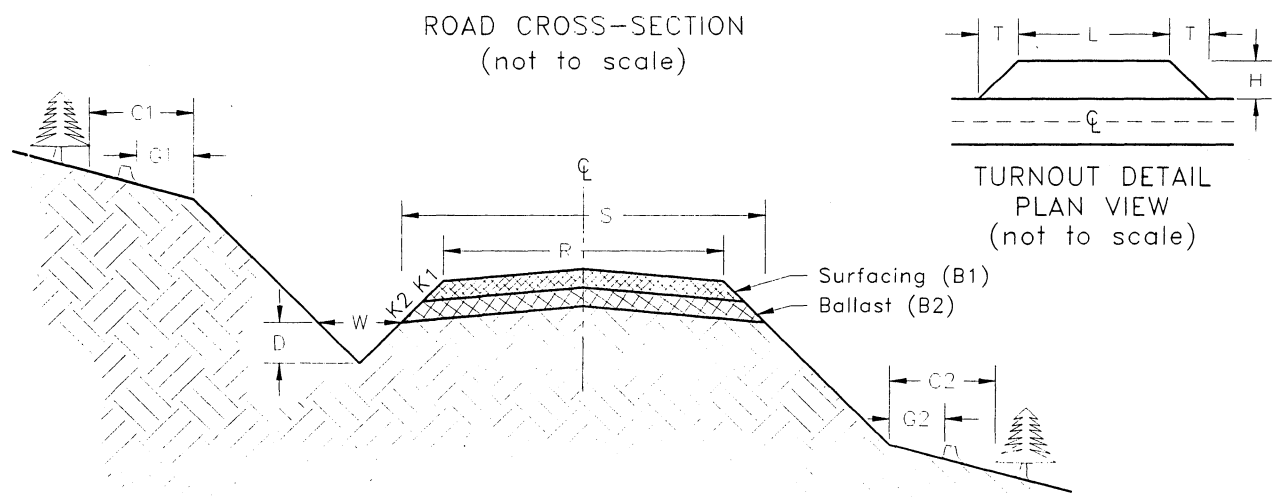
10.1-1A  
Light Abandonment shall consist of:  
covering roads with logging slash where possible

TYPICAL SECTION SHEET



Road Number	From Station	To Station	TYPE	Subgrade Width	Road Width	Ditch		Crown in. @ CL	Grubbing Limits		Clearing Limits	
						Width	Depth		G1	G2	C1	C2
P72	37+80	41+80	RECONST	14	12	2	1	4	5 FT	5 FT		
P721	0+00	6+10	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P721	6+10	7+90	CONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P721	7+90	14+70	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P721	14+70	16+70	CONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P721	16+70	27+20	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P721	27+20	31+35	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P721A	0+00	11+00	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7200	82+80	99+90	RECONST	14	12	0	0	4	5 FT	5 FT	Tags	Tags
P7210	4+30	25+80	RECONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7210	25+80	57+40	RECONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7210	57+40	95+00	RECONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7210	95+00	115+70	RECONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7210	115+70	139+70	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7211	0+00	5+10	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7211	5+10	7+10	CONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7211	7+10	11+40	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7212	0+00	7+10	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7213	0+00	5+20	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7213	5+20	13+20	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7214	0+00	10+00	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7215	0+00	1+35	CONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7215	1+35	8+35	RECONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7215	8+35	17+30	RECONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7215	17+30	21+90	RECONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7215	21+90	24+05	CONST	14	12				5 FT	5 FT	Tags	Tags
P7215	24+05	24+90	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags

TYPICAL SECTION SHEET



Road Number	From Station	To Station	TYPE	Subgrade Width	Road Width	Ditch		Crown in. @ CL	Grubbing Limits		Clearing Limits	
						Width	Depth		G1	G2	C1	C2
P7216	0+00	6+95	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7217	0+00	1+55	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7218	0+00	4+55	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7219	0+00	10+75	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7219	10+75	13+90	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7219	13+90	19+50	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7219	19+50	21+50	CONST	14	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7219	21+50	25+20	CONST	12	12	OUTS	LOPE		5 FT	5 FT	Tags	Tags
P7220	0+00	54+50	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7220	54+50	56+00	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7221	0+00	10+30	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7222	0+00	14+80	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7222	14+80	21+40	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7222	21+40	30+90	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7222	30+90	39+85	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7223	0+00	13+30	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7223	13+30	15+30	CONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7223	15+30	24+00	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7224	0+00	11+65	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7224	11+65	16+00	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7225	0+00	17+75	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7226	0+00	7+75	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7227	0+00	5+40	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7228	0+00	1+90	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7228	1+90	15+70	RECONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7228	15+70	20+70	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags
P7228	20+70	22+70	CONST	14	12	2	1	4	5 FT	5 FT	Tags	Tags
P7228	22+70	27+00	CONST	12	12	2	1	4	5 FT	5 FT	Tags	Tags

ROCK LIST

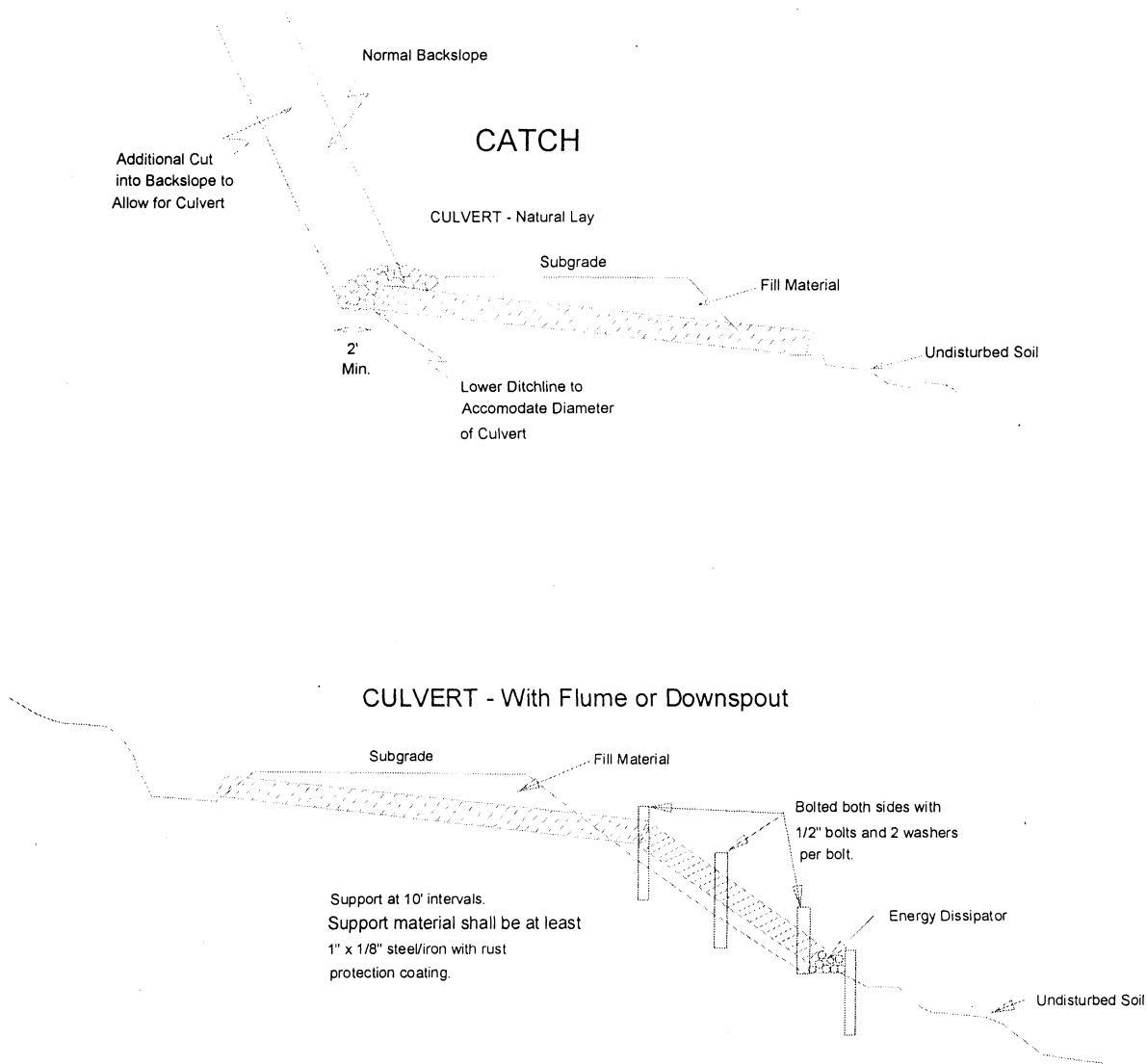
BALLAST

Road Number	From Station	To Station	Rock Slope	unompacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2					L	H	T
P72	38+10	40+10	2:1	6 IN	24	2	48	P7210 PIT	50 FT	10 FT	25 FT
P721	6+90	8+90	2:1	6 IN	24	2	48	P7210 PIT			
	14+70	16+70	2:1	6 IN	24	2	48	P7210 PIT			
P7200	82+80	99+90	2:1	6 IN	24	17.1	410	P7210 PIT	50 FT	10 FT	25 FT
P7210	4+30	115+70	2:1	6 IN	24	111.4	2674	P7210 PIT			
	134+00	137+50	2:1	6 IN	24	2.5	84	P7210 PIT			
	TURN	OUTS		6 IN	24	4	96	P7210 PIT	50 FT	10 FT	25 FT
P7211	5+10	7+10	2:1	6 IN	24	2	48	P7210 PIT	50 FT	10 FT	25 FT
P7215	0+00	17+30	2:1	6 IN	24	17.3	415	P7210 PIT			
P7215	21+90	24+05	2:1	6 IN	24	3	72	P7210 PIT			
	TURN	OUTS		6 IN	24	1	24	P7210 PIT	50 FT	10 FT	25 FT
P7218	0+00	2+10	2:1	6 IN	24	2.1	51	P7210 PIT			
P7219	19+40	21+40	2:1	6 IN	24	2	48	P7210 PIT			
P7220	0+00	28+70	2:1	6 IN	24	28.7	689	P7210 PIT	50 FT	10 FT	25 FT
	53+50	55+50	2:1	6 IN	24	2	48	P7210 PIT			
P7221	1+20	3+60	2:1	6 IN	24	2	58	P7210 PIT			
	5+20	7+20	2:1	6 IN	24	2	48	P7210 PIT	50 FT	10 FT	25 FT
P7222	0+00	27+85	2:1	6 IN	24	27.9	670	P7210 PIT			
P7223	13+30	15+30	2:1	6 IN	24	2	48	P7210 PIT			
P7224	0+00	16+00	2:1	6 IN	24	16.0	384	P7210 PIT	50 FT	10 FT	25 FT
	TURN	OUT		6 IN	24	1	24	P7210 PIT			
P7225	8+40	10+40	2:1	6 IN	24	2	48	P7210 PIT			
P7228	20+70	22+70	2:1	6 IN	24	2	48	P7210 PIT			

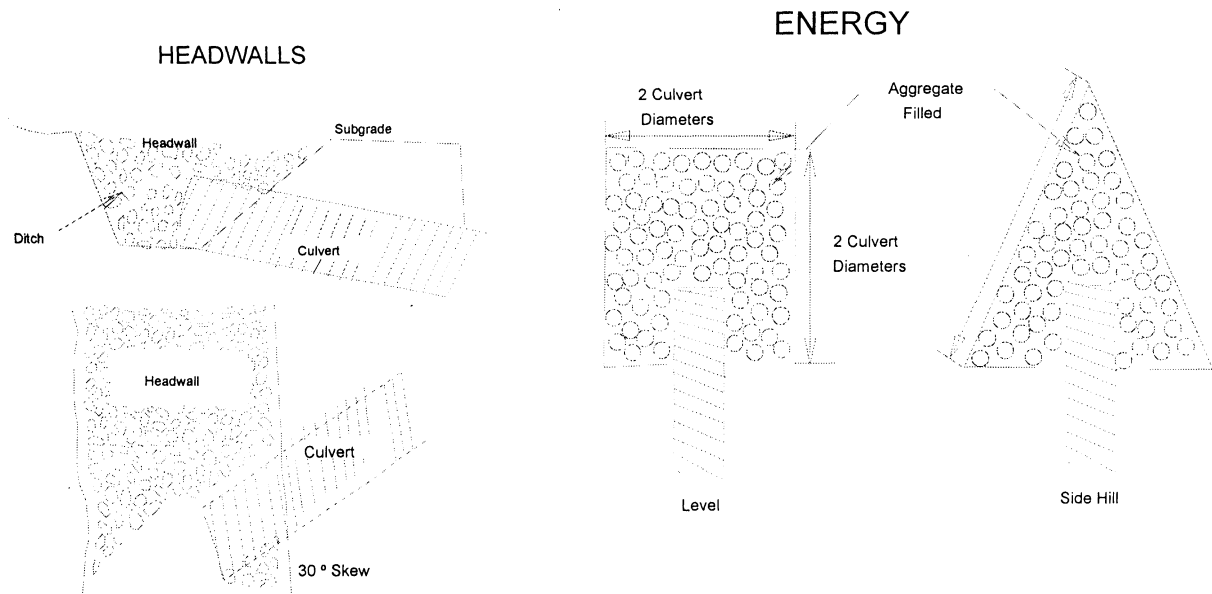
BALLAST TOTAL 6131 Cubic Yards

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 1 of 2)



Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.

Dissipator Specifications:  
Depth: 1 culvert diameter  
Aggregate: as specified in the Culvert list.

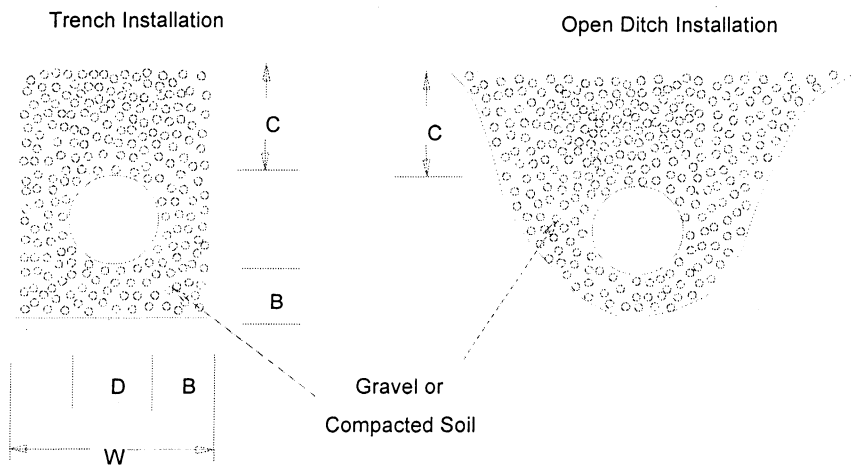
CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

- 1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.
- 2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.
- 3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.
- 4. Site conditions and availability of bedding materials often dictate the type of installation method used.
- 5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% is required. This minimum compaction can be achieved by either hand or mechanical tamping.



MINIMUM DIMENSIONS  
Trench or Open Ditch

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

CULVERT LIST

Road #	Station	Diameter (inches)	Gage	Length (feet)	Inlet riprap	Outlet riprap	Headwall	Remarks
P72	39+10	24	16	30			NO	DRAW
P721	7+90	24	16	30			NO	DRAW
	15+70	24	16	36			NO	DRAW
P7210	40+80	24	16	30			NO	DRAW
	86+20	18	16	34			NO	DRAW
P7211	6+10	18	16	30			No	DRAW
P7215	23+30	30	16	32			NO	DRAW
P7219	20+40	18	16	32			NO	DRAW
P7220	6+90	24	16	36			NO	DRAW
	9+90	18	16	36			NO	DRAW
	54+50	24	16	30			NO	DRAW
P7221	2+20	24	16	30			NO	DRAW
	2+60	18	16	30			NO	DRAW
	6+20	24	16	30			NO	DRAW
P7222	4+85	24	16	34			NO	DRAW
	16+20	24	16	36			NO	DRAW
P7223	14+30	30	16	34			NO	DRAW
P7225	9+40	24	16	30			NO	DRAW
P7228	21+70	24	16	32			NO	DRAW

DITCHOUT LIST

ROAD	STATION	COMMENTS
P721A	5+00	DRAIN LEFT AND RIGHT
P7210	122+20	DRAIN LEFT AND RIGHT
P7215	5+50	DRAIN LEFT AND RIGHT
P7222	15+40	DRAIN LEFT AND RIGHT
	39+30	DRAIN LEFT AND RIGHT
P7224	13+10	DRAIN LEFT AND RIGHT
P7225	1+10	DRAIN LEFT AND RIGHT
	7+95	DRAIN LEFT AND RIGHT
	10+05	DRAIN LEFT AND RIGHT

## ROLLING DIP LIST

ROAD	STATION	COMMENTS
P72	41+80	WITH DITCHOUT FOR 50 FT
P721	6+10	DRAIN LEFT
	8+70	DRAIN LEFT
	11+00	DRAIN LEFT
	14+60	DRAIN LEFT
	16+40	DRAIN LEFT
	19+55	DRAIN LEFT
	27+20	DRAIN LEFT
	30+00	DRAIN LEFT
	30+80	LOW SPOT
P7210	9+50	DRAIN RIGHT
	16+00	DRAIN RIGHT
	37+60	DRAIN RIGHT
	42+00	DRAIN RIGHT
	50+50	DRAIN RIGHT
	56+00	DRAIN RIGHT
	90+30	DRAIN RIGHT
	95+00	DRAIN RIGHT
	101+00	DRAIN RIGHT
	106+00	DRAIN RIGHT
	108+00	DRAIN LEFT
	113+30	DRAIN RIGHT
	118+20	DRAIN LEFT
	125+00	DRAIN LEFT
	130+00	DRAIN LEFT
	139+00	Drain right at junction with P7218
P7211	5+10	DRAIN LEFT
	6+80	DRAIN RIGHT
P7213	2+20	DRAIN LEFT
	10+50	DRAIN RIGHT
P7214	3+00	DRAIN RIGHT
	8+20	DRAIN RIGHT
P7215	1+35	DRAIN RIGHT
	8+35	DRAIN RIGHT
	11+65	DRAIN RIGHT
	15+30	DRAIN RIGHT
	21+90	DRAIN RIGHT
	24+05	DRAIN RIGHT
P7216	2+65	DRAIN LEFT
P7219	13+90	DRAIN RIGHT
	19+70	DRAIN RIGHT
	21+0	DRAIN RIGHT
	23+15	DRAIN RIGHT



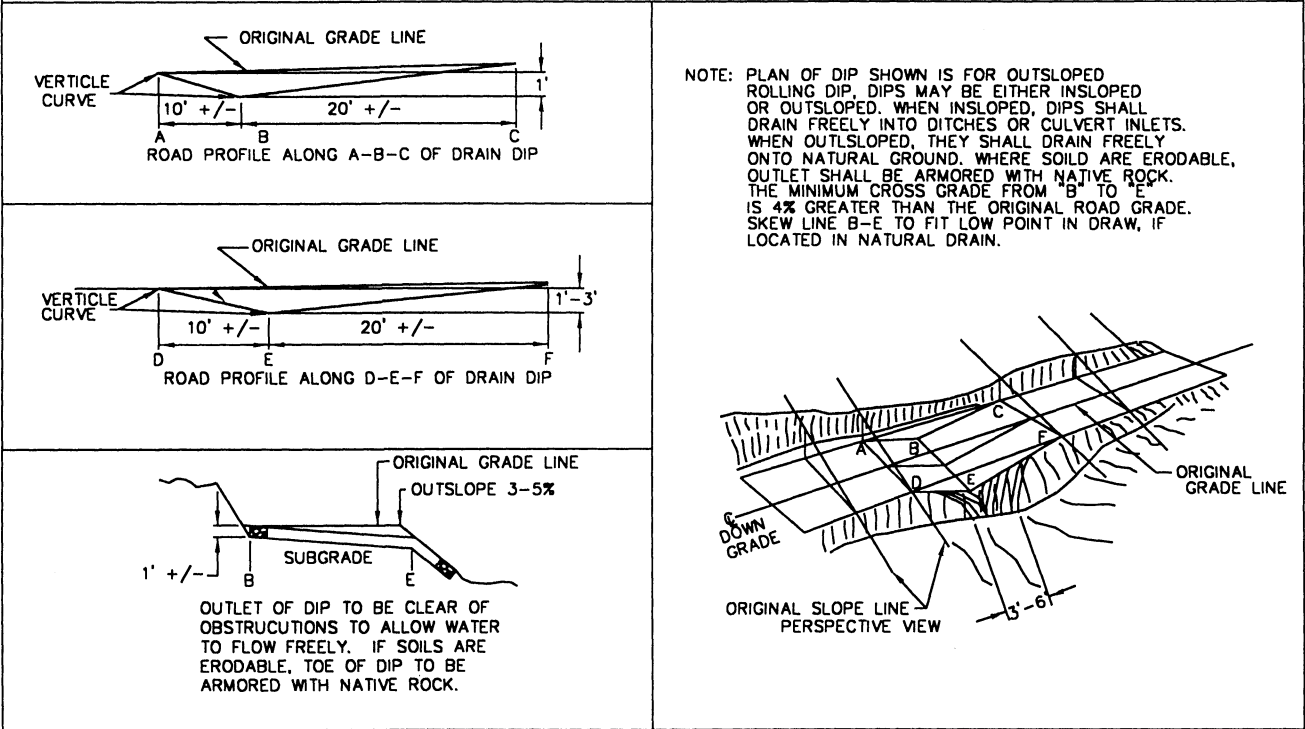
ROLLING DIP LIST

ROAD	STATION	COMMENTS
P7220	3+40	DRAIN LEFT WITH DITCHOUT
	17+00	DRAIN LEFT WITH DITCHOUT
	22+00	DRAIN LEFT
	24+00	DRAIN LEFT WITH DITCHOUT
	28+70	DRAIN RIGHT
	36+30	DRAIN RIGHT
	43+20	DRAIN RIGHT
	48+70	DRAIN RIGHT
	50+00	DRAIN RIGHT
	53+45	DRAIN RIGHT
	55+25	DRAIN RIGHT
P7221	1+25	DRAIN RIGHT
	3+70	DRAIN RIGHT
	5+55	DRAIN RIGHT
	7+30	DRAIN RIGHT
P7222	0+35	DRAIN LEFT
	3+70	DRAIN LEFT
	7+40	DRAIN RIGHT
	19+44	DRAIN LEFT
	26+30	DRAIN LEFT
	30+90	DRAIN LEFT
P7223	2+15	DRAIN LEFT
	12+30	DRAIN RIGHT
	15+50	DRAIN LEFT
	19+00	DRAIN LEFT
P7224	1+70	DRAIN LEFT
	3+30	DRAIN LEFT
	15+10	DRAIN RIGHT
P7225	12+60	DRAIN RIGHT
P7226	5+30	DRAIN LEFT
P7227	2+70	DRAIN RIGHT
P7228	1+90	DRAIN RIGHT
	7+30	DRAIN RIGHT
	17+70	DRAIN LEFT
	20+50	DRAIN LEFT

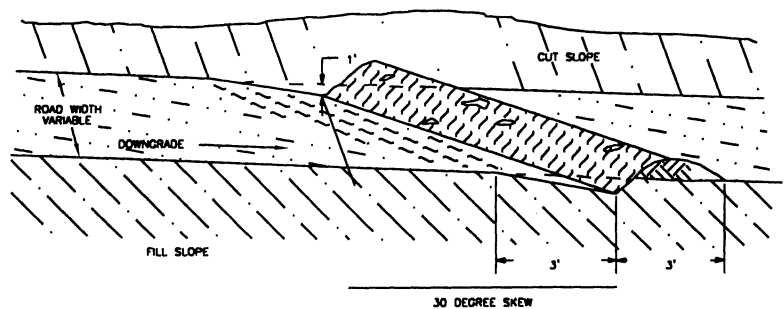
TURNOUT LIST

Road #	Start Station	End Station	Width ft	Length ft	Taper	Comments
P721	9+10	10+10	10 ft	50	25 ft	On right
P7210	27+50	28+50	10 ft	50	25 ft	On right
	51+60	52+60	10 ft	50	25 ft	On right
	84+40	85+40	10 ft	50	25 ft	On right
	106+50	107+50	10 ft	50	25 ft	Use existing road
P7215	9+55	10+55	10 ft	50	25 ft	On right
P7219	12+35	13+35	10 ft	50	25 ft	On right
P7220	46+80	47+80	10 ft	50	25 ft	On right
P7223	17+50	18+50	10 ft	50	25 ft	On right
P7224	13+60	14+60	10 ft	50	25 ft	On right
P7228	12+80	13+80	10 ft	50	25 ft	Use existing road

ROLLING DIP DETAIL

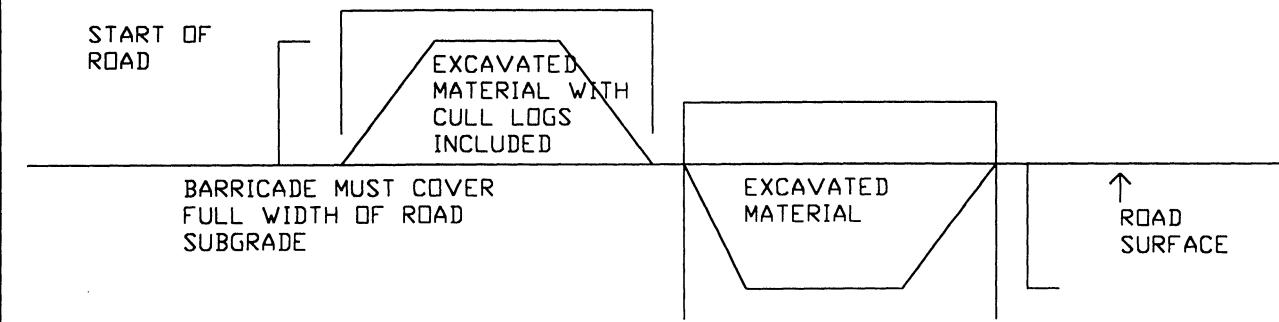


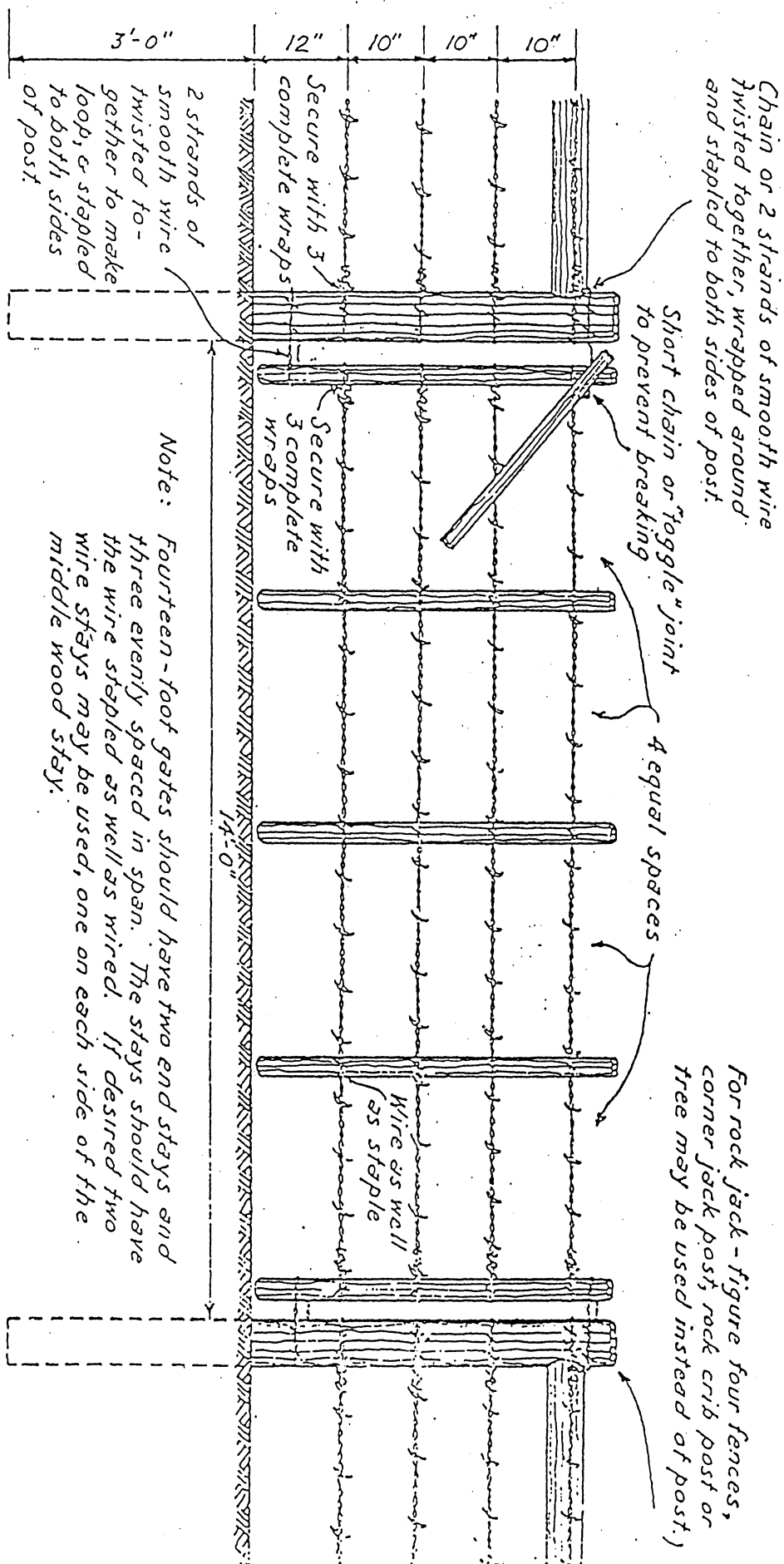
DRIVABLE AND NON-DRIVABLE WATER BAR DETAIL



- NOTES
- 1. ALL WATER BARS SHALL BEGIN AT THE INTERSECTION OF THE ROADBED AND CUT SLOPE AND RUN ACROSS THE ENTIRE WIDTH OF THE ROADBED.
  - 2. ALL WATER BARS SHALL HAVE FREE FLOWING OUTLETS.
  - 3. Non-drivable waterbars will have a 1 ft vertical cut and a 1 foot horizontal cut and shall be impossible to vehicles

EARTH BARRICADE DETAIL





# FOUR WIRE GATE DETAIL

ROAD PLAN DATE: 11-14-2002 CONTRACT #: 73650

PROJECT NAME: NORTH BEEKS

SHEET 27 OF 28

STATE OF WASHINGTON  
DEPARTMENT OF NATURAL RESOURCES  
FOREST ACCESS ROAD  
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills

1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 12:1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
3. Undesirable slide materials and debris shall not be mixed into the surface material.

B. Surface

1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
3. Watering may be required to control dust and to retain fine surface rock.
4. Desirable surface material shall not be bladed off the roadway.
5. Replace surface material lost or worn away.
6. Remove berms except as directed by the State.
7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage

1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed.
4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
5. Keep silt bearing surface runoff from getting into live streams.

D. Structures

Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season

Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

F. Debris

Remove fallen timber, limbs, and stumps from the slopes or roadway.